Amendments to the Claims:

Please amend the claims as shown below. This Listing of Claims will replace prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A method for embedding ~~a~~ digital watermark information in a document image, comprising:

~~a step of inputting digital watermark information;~~

~~a step of inputting an image;~~

a step of dividing the document image into a plurality of document areas;

a step of determining an order of the embedding for the plurality of document areas based on a size of the document area or a number of characters included in the document area,

wherein the order of the embedding is determined based on a relationship of relative positions of the document areas in a case where the plurality of document areas have the same size of the document area or the same number of characters included in the document area; and

~~a step of ordering the plurality of areas according to a predetermined ordering criterion;~~

a step of embedding the digital watermark information over the plurality of document areas ~~that have been ordered; and~~ in the document image in accordance with a determined order of the embedding.

~~a step of outputting an image with the digital watermark information embedded therein.~~

2. (Currently Amended) A method according to Claim 1, further comprising a circumscribed-rectangle detecting step of detecting rectangles circumscribed respectively to characters included in the document image, wherein the digital watermark information is embedded in the embedding step based on the circumscribed rectangles detected.

3. – 6. Cancelled

7. (Currently Amended) A method according to Claim ~~5~~ 1, further comprising a step of exempting a part of the plurality of document areas from an object of the embedding ~~ordering~~ prior to the ~~ordering~~ determining step.

8. – 10. Cancelled

11. (Currently Amended) A method according to Claim 4 1, further comprising a second embedding step of embedding, in the plurality of document areas, information representing ~~an order of the document areas that have been ordered~~ the order of the embedding.

12. (Currently Amended) A method according to Claim 4 1, wherein digital watermark information having one bit is embedded in the embedding step by rotating a character included in each of the document areas.

13. (Currently Amended) A method according to Claim 4 1, wherein digital watermark information having a predetermined number of bits larger than one bit is embedded in the embedding step by rotating a character included in the each

of the document areas.

14. (Currently Amended) A method according to Claim 4 1, wherein digital watermark information is embedded in the embedding step by adjusting a gap between characters included in each of the document areas.

15. (Currently Amended) A method according to Claim 4 1, wherein digital watermark information is embedded in the embedding step ~~by units of~~ based on a predetermined number of characters included in each of the document areas.

16. (Currently Amended) An apparatus for embedding ~~a~~ digital watermark information in a document image, comprising:

~~an input unit for inputting digital watermark information;~~

~~an image input unit for inputting an image;~~

an area dividing unit ~~for~~ configured to divid~~ing~~e the document image into a plurality of document areas;

a determination unit configured to determine an order of the embedding for the plurality of document areas based on a size of the document area or a number of characters included in the document area,

wherein the order of the embedding is determined based on a relationship of relative positions of the document areas in a case where the plurality of document areas have the same size of the document area or the same number of characters included in the document area; and

~~an area ordering unit for ordering the plurality of areas according to a predetermined ordering criterion~~;

an embedding unit ~~for~~ configured to embed~~ding~~ the digital watermark

information over the plurality of document areas ~~that have been ordered; and~~ in the document image in accordance with the determined order of the embedding.

~~an output unit for outputting the image with the digital watermark information embedded therein.~~

17. (Currently Amended) A computer program product storing a program for embedding ~~a~~ digital watermark information in a document image, the program comprising:

~~a step of inputting digital watermark information;~~

~~a step of inputting an image;~~

a step of dividing the document image into a plurality of document areas;

a step of determining an order of the embedding for the plurality of document areas based on a size of the document area or a number of characters included in the document area,

wherein the order of the embedding is determined based on a relationship of relative positions of the document areas in a case where the plurality of document areas have the same size of the document area or the same number of characters included in the document area; and

~~a step of ordering the plurality of areas according to a predetermined ordering criterion;~~

a step of embedding the digital watermark information over the plurality of document areas ~~that have been ordered; and~~ in the document image in accordance with the determined order of the embedding.

~~a step of outputting an image with the digital watermark information embedded therein.~~

18. (Currently Amended) A method for detecting ~~a~~ digital watermark information in a document image, comprising:

~~a step of inputting an image with digital watermark information embedded therein;~~

a step of dividing the document image into a plurality of document areas;

a step of determining an order of the detecting for the plurality of document areas based on a size of the document area or a number of characters included in the document area,

wherein the order of the detecting is determined based on a relationship of relative positions of the document areas in a case where the plurality of document areas have the same size of the document area or the same number of characters included in the document area; and

~~a step of ordering the plurality of areas according to a predetermined ordering criterion;~~

a step of detecting the digital watermark information over the plurality of document areas ~~that have been ordered; and~~ in the document image in accordance with the determined order of the detecting.

~~a step of outputting an image with the digital watermark information embedded therein.~~

19. (Currently Amended) An apparatus for detecting ~~a~~ digital watermark information in a document image, comprising:

~~an input unit for inputting an image with digital watermark information embedded therein;~~

a dividing unit ~~for~~ configured to divid~~ing~~e the document image into a plurality of document areas;

a determination unit configured to determine an order of the detecting for the plurality of document areas based on a size of the document area or a number of characters included in the document area,

wherein the order of the detecting is determined based on a relationship of relative positions of the document areas in a case where the plurality of document areas have the same size of the document area or the same number of characters included in the document area; and

~~an area ordering unit for ordering the plurality of areas according to a predetermined ordering criterion;~~

a detecting unit ~~for~~ configured to detecting the digital watermark information over the plurality of document areas ~~that have been ordered; and~~ in the document image in accordance with the determined order of the embedding.

~~an output unit for outputting the digital watermark information detected.~~

20. (Currently Amended) A computer program product storing a program for detecting ~~a~~ digital watermark information in a document image, the program comprising:

~~a step of inputting an image with digital watermark information embedded therein;~~

a step of dividing the document image into a plurality of document areas;

a step of determining an order of the detecting for the plurality of document areas based on a size of the document area or a number of characters included in the document area,

wherein the order of the detecting is determined based on a relationship of relative positions of the document areas in a case where the plurality of document areas have the same size of the document area or the same number

of characters included in the document area; and

~~a step of ordering the plurality of areas according to a predetermined ordering criterion;~~

a step of detecting the digital watermark information over the plurality of document areas ~~that have been ordered; and~~ in the document image in accordance with the determined order of the embedding.

~~a step of outputting the digital watermark information detected.~~